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1980 HOSPITAL INPATIENT UTILIZATION
BY COUNTY
FOR MEDICARE AND MEDICAID PATIENTS

by
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Introduction

This study examines 1980 inpatient utilization of nonfederal short-stay general hospitals by North Carolina residents. Medical records abstracts for patients discharged from January through December 1980 were assembled from several different sources. This data collection effort updates and expands an October 1978 pilot project, which is fully described in an earlier study in this series (1).

The main purpose of this report is to present hospital utilization rates for selected diagnosis groups and for selected surgical procedures by county of residence of the patients. Data from a number of different hospitals are combined to arrive at this residence-based information. These rates are for Medicare and Medicaid patients only, since these are the only groups for which we had data complete enough to produce estimates at the county level. In addition, there are a brief overview of how the data were collected, an attempt to validate the total data file with other sources of hospital data, and a comparison of total North Carolina hospital utilization in 1980 with that in the United States as a whole.

At the end is a discussion of the major results of the study and of the advantages and limitations of this type of data. The information presented herein shows that North Carolina has a consistently lower rate of hospitalization than the United States as a whole. Another major finding is that North Carolina county hospital use rates vary by a factor greater than two for Medicare patients and by a factor of over four for Medicaid patients. The question is raised of how the need for hospital services is translated into demand.

The method employed here is basically descriptive. We intend to follow this presentation with a more explanatory study, which employs other variables in an attempt to elucidate some causes of the substantial geographic differences in hospital utilization that have been observed.

*See acknowledgments at end of paper.

Data Collection

These data were collected with the cooperation of the North Carolina Hospital Association. Numerous reports have been provided to participating hospitals showing zip code market shares by hospital service and other tabulations designed to aid long-range planning. Release of data that identify an individual hospital requires written permission from the administrator of the facility, and this has been granted for almost all of the facility-specific data requests we have received. Many requests for regional or statewide aggregations have also been responded to, particularly from health-related programs within the Department of Human Resources. The diagnosis information from the discharge abstracts has been especially useful for portraying inpatient hospital morbidity in North Carolina.

The data were collected exclusively from existing automated systems, requiring no additional forms to be completed by any hospital. The bulk of the data were purchased from the Commission on Professional and Hospital Activities (CPHA), since over 70 percent of North Carolina general hospitals were on PAS in 1980. We received written permission to use these data from 93 of the 94 general hospitals on PAS. This resulted in about 669,000 patient records. Seven large hospitals with in-house computer systems supplied tapes with a total of over 179,000 records. For the remaining, mostly small, hospitals we used data from the Health Care Financing Administration (HCFA) for their Medicare and Medicaid patients, which were submitted by the PSROs in North Carolina. The total record count for all 132 general hospitals was 889,000 including newborns, which represents about 93 percent of the 1980 inpatients of these facilities. Thus we are missing only the nonfederal-pay patients in about 30 small hospitals, and almost all patients age 65 and over are included since no Medicare data are missing. To complete the data for Medicare and Medicaid patients, we added patient records from HCFA for North Carolina residents going to South Carolina and Virginia hospitals (about 4000). Thus we have information for nearly all 1980 Medicare and Medicaid patients who were residents of North Carolina, except in a few areas with patients going to hospitals in Georgia and Tennessee. It is this subfile that we have used to produce the hospital utilization rates by county of residence in Tables 6-9.

The variables collected for each of the 1980 hospital inpatients are: hospital ID, admission and discharge dates, age, race, sex, payment source, up to seven diagnoses, discharge status, up to eleven operative and/or diagnostic procedures, county and zip code of patient's residence, and major hospital service category (derived from principal procedure and diagnosis). These 1980 data were assembled, edited, and ready for analysis by January 1982.

Validation of the 1980 Data with Other Sources

Another major data base that covers total 1980 utilization of North Carolina short-stay general hospitals is the hospital relicensure information collected by the Division of Facility Services (DFS) (2). These are facility summaries that do not contain nearly as much detail as the patient discharge data, though it is public information available every year. Some broad comparisons of the two data sets are possible. One discrepancy is that the DFS data were collected for the period 10/1/79 through 9/30/80 whereas the discharge data are for calendar year 1980. The numbers presented in this section from the 1980 discharge data have been appropriately adjusted to account for an overall seven percent missing patients statewide.

Table 1 presents some comparisons for selected variables. The two sources of data match up very well for these variables, especially considering that there is 3 months' difference in the annual reporting periods. An examination of the death certificates filed with the Division of Health Services reveals 25,649 calendar year 1980 deaths to inpatients of the 132 North Carolina nonfederal general hospitals. But this figure does include about 450 newborn deaths and a few deaths in long-term care units of the general hospitals, which are not included in Table 1 and are not easily separated from the death certificate file. Thus the vital statistics file suggests that the hospital data are reasonably accurate for deaths. The reader may also note that about half of all 1980 North Carolina deaths occurred to inpatients of general hospitals.

Other more specific comparisons encountered in the course of responding to special requests emphasize the consistency between these two data bases. For example, the DFS data (with patient origin based on a 3-month sample) showed an estimate of 105 patients annually coming to Memorial Mission Hospital from Burke County, compared to 104 based on the 12 months of discharge data. DFS estimates 7,710 total 1980 discharges to Stanly County residents from all North Carolina general hospitals, compared to 7,879 derived from the discharge data. Normal newborns are excluded in both of these cases. It should be mentioned that for the discharge data county of residence is in most cases derived from zip code.

Another interesting comparison is between the 1980 discharge data and that collected in October 1978. Since the one month is only a sample of 1978 discharges, apparent trends from 1978 to 1980 should not be taken as definitive. Table 2 shows some comparisons between these two data sets. The two columns match up remarkably well, further validating the 1980 data and also indicating that the October sample probably represented the year 1978 rather well along these dimensions. The largest difference is the increase in the percent of patients with Medicare as the principal payment source from 24.0 in 1978 to 28.1 in 1980. But there has been a similar trend in the United States as a whole, with the percent Medicare increasing from 24.9 in 1977 to 27.0 in 1979 (3).

Comparisons of North Carolina to the United States

Since the 1980 hospital discharge data have been compiled, at least 50 reports have been produced tailored to individual requests. This is the first attempt to tabulate the information for a more general audience, and such an effort must necessarily be limited due the tremendous number of possible tabulations. Persons with a specific need for this type of information that is not addressed here are urged to contact the State Center for Health Statistics. The present section presents some comparisons of the state of North Carolina to the United States, and the next two sections examine discharge rates by county of residence for selected diagnoses and surgical procedures.

Table 3 compares 1980 North Carolina nonfederal general hospital inpatients to those 1980 patients in the United States with regard to selected demographic variables and payment source. These data are for all North Carolina general hospital inpatients, while the county data in Tables 6-9 are for Medicare and Medicaid inpatients only. The North Carolina numbers in Table 3 are for residents and have been appropriately adjusted to account for missing resident patients statewide, approximately 9 percent (including those going to out-of-state hospitals). The United States data are based on a sample of inpatient medical records from nonfederal short-stay hospitals collected through the National Hospital Discharge Survey (3,4), and are thus estimates subject to some sampling

Table 1

Comparison of 1980 Division of Facility Services Data to
1980 Hospital Discharge Data, Patients in 132 N.C. General Hospitals
(Normal Newborns Excluded)

	<u>DFS</u>	<u>Discharge Data</u>
Total Patients	884,153	880,571
Age 0-13 (with %)	80,642 (9.1)	77,652 (8.8)
Age 14-64 (with %)	590,829 (66.8)	586,833 (66.6)
Age 65+ (with %)	212,682 (24.1)	216,086 (24.5)
Discharged Dead (with %)	23,113 (2.6)	24,494 (2.8)

Table 2

Comparison of 1980 Hospital Discharge Data
to October 1978 Discharge Data, 132 N.C. General Hospitals
(Normal Newborns Excluded)

	<u>Percent of Patients</u>	
	<u>October 1978</u>	<u>1980</u>
Female	61.3	60.4
White	77.8	77.9
Black	19.0	19.2
Other Nonwhite	0.9	0.9
Race Not Reported	2.3	2.0
Discharged Dead	2.6	2.8
Expected Principal Payment Source		
Medicare	24.0	28.1
Medicaid	6.2	6.5
Other Government	2.7	2.3
Workmen's Compensation	1.3	1.2
Blue Cross	22.5	22.7
Commercial Insurance	30.2	29.8
Self Pay	8.7	7.6
Other	4.4	1.8

error. The latest available payment source data and percent discharged dead for the United States are for 1979; all other data in Table 3 are for 1980.

Table 3 shows that about 60 out of every 100 discharges are to females, both in North Carolina and the United States. When deliveries are excluded, the percent of discharges to females drops to around 50. North Carolina had a higher percent of discharges to nonwhites in 1980, (assuming that "not reported" for the United States is proportionately distributed between the two race groups), as would be expected since North Carolina has a higher percent of total population that is nonwhite. Reporting of race on the medical records appears to be much better in North Carolina than in the United States sample of discharges. The distribution of discharges by age is similar for North Carolina and the United States, though North Carolina shows a smaller percent 65 and over, consistent with its lower percent 65 and over in the total population. North Carolina discharge rates are lower than those for the United States for all sex, race, and age groups shown in this table, generally around 10 percent lower. Nonwhites have a rate of discharge from general hospitals around 15 percent lower than that for whites, both in North Carolina and the United States, while male rates are about 30 percent lower than those for females (including deliveries). The percent discharged dead is slightly higher in North Carolina, though this difference is not statistically significant due to sampling variability for the United States figure.

The payment source information in Table 3 shows similarities between the United States and North Carolina, except that North Carolina has higher percents Medicare and self pay and a lower percent Medicaid. The difference for Medicare is not statistically significant, and the percents would probably be about equal if the United States number were updated to 1980 based on the recent trend. But it is curious that North Carolina shows a similar percent Medicare since its percent of total population age 65 and over in 1980 was 10.3 compared to 11.3 for the United States. Further examination, however, reveals that in 1979 13.7 percent of Medicare enrollees in North Carolina were disabled compared to 10.5 percent for the United States. Since the disabled have a substantially higher rate of hospitalization than the aged, this higher percent disabled probably results in more total Medicare discharges than would be the case if North Carolina had the same percent disabled as the United States.

Table 4 compares North Carolina in 1978 and 1980 with the United States in 1980 with regard to selected diagnostic categories. The data in Table 2 suggest that October was a representative month in 1978 for some indicators, and total October 1978 discharges multiplied times 12 is only about one percent different from the total discharges for the year reported to the Division of Facility Services. Yet when those annualized data are broken out in detail, as for diagnostic categories, problems with representativeness will be encountered. Though there are some problems, the October 1978 annualized rates have been included in Table 4 for purposes of comparison, more for assessing representativeness than for assessing trends.

Table 4 also shows consistently higher 1980 discharge rates for the United States when compared to North Carolina. For total discharges the United States rate is about 13 percent higher. The only exceptions are for "symptoms and ill-defined conditions," where North Carolina's much higher rate may in part reflect a difference in the reporting of definitive diagnoses, and for diseases of the genitourinary system where the North Carolina and United States rates are about equal. For cerebrovascular disease and diseases of the digestive system the United States rate is less than 10 percent higher than that for North Carolina.

Table 3

1980 Inpatients of Nonfederal General Hospitals
by Selected Demographic Variables and Payment Source,
Residents of North Carolina and the United States
(Normal Newborns Excluded)

	<u>N.C.</u>	<u>U.S.</u> *
Sex		
Percent Female	60.6	60.0
Rates		
Female Discharges per 1000 Population	173.7	194.8
Male Discharges per 1000 Population	119.9	137.6
Race		
Percent White	77.5	75.3
Percent Nonwhite	20.6	12.9
Percent Race Not Reported	1.9	11.8
Rates**		
White Discharges per 1000 Population	153.9	171.5
Nonwhite Discharges per 1000 Population	127.9	145.0
Age		
Percent 0-14	9.4	9.7
Percent 15-44	41.4	41.3
Percent 45-64	24.8	22.9
Percent 65 and over	24.4	26.1
Rates		
Discharges 0-14 per 1000 Population	61.2	71.6
Discharges 15-44 per 1000 Population	128.7	148.6
Discharges 45-64 per 1000 Population	186.7	194.6
Discharges 65 and over per 1000 Population	351.1	386.2
Percent Discharged Dead	2.8	2.5
Expected Principal Payment Source (Percents)		
Medicare	27.9	27.0
Medicaid	6.5	8.8
Other Government	2.4	2.5
Workmen's Compensation	1.2	1.8
Private Insurance	52.6	52.4
Self Pay	7.6	5.9
Other	1.8	1.6

* Payment source data and percent discharged dead are for 1979, and are from reference (3); other U.S. data are for 1980 from reference (4).

** Not reported has been distributed back into the two race groups. 1980 census population was used in the denominators.

Table 4

Inpatient Discharges from Nonfederal General Hospitals
Per 10,000 Population for Selected Principal Diagnoses,*
Residents of North Carolina and the United States
(Normal Newborns Excluded)

	North Carolina October 1978 (annualized)**	North Carolina 1980	United States 1980
Total Discharges	1472.8	1475.8	1670.3
Heart Disease	94.6	114.2	141.3
Malignant Neoplasms	65.8	70.1	80.7
Diabetes	18.3	21.1	28.5
Cerebrovascular Disease	28.7	33.3	35.1
Cirrhosis of the Liver	3.7	3.7	4.5 [†]
Chronic Lung Disease, including Bronchitis, Emphysema, and Asthma	24.3	34.1	38.9 [†]
All Diseases of the Respiratory System	118.5	123.2	152.1
Infective and Parasitic Diseases	51.9	25.3	28.7
Diseases of the Blood & Blood Forming Organs	10.6	11.6	14.8
Mental Disorders	52.6	52.8	74.7
Diseases of the Nervous System	62.8	66.0	77.8
Diseases of the Digestive System	157.0	190.6	205.3
Diseases of the Genitourinary System	156.6	159.5	158.9
Pregnancy and Childbirth ^{††}	179.3	172.2	210.7
Diseases of the Skin	20.2	20.4	26.4
Diseases of the Musculoskeletal System	70.3	80.4	99.1
Congenital Anomalies	12.9	12.0	15.1
Symptoms and Ill-Defined Conditions	85.1	83.6	28.1
Accidents, Poisonings, and Violence	135.9	120.7	158.6

*The October 1978 data are based on the ICDA-8 classification system, while the 1980 data are based on the ICD-9-CM. Categories with severe comparability problems across the two systems are not included in this table. All 1980 categories here have the same codes as in the regular ICD-9 system, which is used for coding causes of death. There is a minor difference from our usual publications for heart disease, where codes 391-398, 402, 404, 406-416, and 420-429 were used to match the U.S. hospital discharge data tabulations.

**These rates will not agree exactly with those published in reference (1) since they have been adjusted downward by 2.7 percent to make them more comparable with the 1980 rates, since the 1980 Census revised the North Carolina population projections (denominators) upward by about 2.7 percent.

†1979 information was used from reference (5); all other U.S. rates are for 1980 from reference (4).

††Total population (male and female) was used in the denominator here, as in the other rates.

There are several differences between the 1978 and 1980 data for North Carolina that are larger than 20 percent. The discharge rate for infective and parasitic diseases declined drastically, and this is due primarily to a very large number of diagnoses of gastroenteritis and colitis recorded in October 1978, which may not be representative of the entire year. The rate for heart disease increased by 21 percent, the rate for chronic lung disease increased by 40 percent, and the rate for diseases of the digestive system increased by 21 percent. There are, however, too many confounding factors to definitely conclude from these data that these are trends. The total discharge rate showed no change from 1978 to 1980. In general, the rates based on October correspond to the 1980 figures in magnitude, validating the 1980 data and suggesting that October is not a bad month for estimating annual hospital utilization, if only one month must be chosen.

Table 5 presents discharge rates for selected types of surgery, and total surgery rates for different demographic groups, comparing North Carolina to the United States for 1980. For the specific procedures, only those that are performed almost entirely in an inpatient setting were chosen, to avoid problems of comparison due to inpatient/outpatient mix. A discharge was counted as having a certain type of surgery if the surgery code appeared in any position of the procedure-code field of the medical record, not just under principal procedure. Again, the U.S. data involve some sampling error, on the order of plus or minus 6-8 percent. In general, the rate of inpatient surgery is higher in the United States as a whole than in North Carolina. North Carolina residents show higher rates of surgery for hysterectomy (17 percent higher), appendectomy (15 percent higher), and total surgery in the age 65+ category (10 percent higher). The United States surgery rate is 8 percent higher than North Carolina's in the 15-44 age category, which includes obstetrical procedures. A higher rate of discharges with obstetrical procedures in the United States is suggested by the Cesarean section rates, where the United States rate is 25 percent higher than that for North Carolina. The total surgery rate for the United States is 3.8 percent higher than that for North Carolina, while the total discharge rate (Table 4) is 13.2 percent higher. This results in a higher percent of discharges with surgery in North Carolina, 49 percent compared to 45 percent for the United States.

The higher rate of utilization of hospitals in the United States, as reflected in Table 4, which exists across age, race, sex, and diagnostic groups, raises some questions, since overall age-adjusted mortality is higher in North Carolina (6) and some data suggest higher general morbidity in North Carolina as well (7). It is possible that lower hospital utilization in North Carolina results in higher mortality because needed medical services are not received by some. More likely is that differences in social and economic factors and in physician practices result in a higher rate of utilization in other areas of the country for a given level of need. This question of how need is translated into demand for hospital services warrants further investigation.

Medicare and Medicaid Utilization by County for Selected Diagnoses

A subset of patients with principal payment sources of Medicare or Medicaid was selected to produce the tables in this and the next sections. For a few hospitals that had problems with the payment source indicators or procedure coding, the PSRO data from the Health Care Financing Administration were substituted for their PAS data or computer tape. Data from HCFA for North Carolina resident Medicare and Medicaid patients going to hospitals in South Carolina and Virginia were added to complete the information for residents of

Table 5
 1980 Inpatient Surgical Discharges from Nonfederal General Hospitals
 Per 10,000 Population
 for Selected Types of Surgery and Demographic Groups
 Residents of North Carolina and the United States
 (Normal Newborns Excluded)

Type of Surgery (With ICD-9-CM Procedure Codes)	<u>North Carolina</u>	<u>United States</u>
Hysterectomy (68.3-68.7)	33.5	28.7
Cesarean Section (74.0-74.2, 74.4, 74.99)	21.8	27.3
Inguinal Hernia Repair (53.0, 53.1)	20.6	23.7
Gallbladder Removal (51.2)	20.4	20.2
Prostatectomy (60.2-60.6)	14.1	14.8
Appendectomy, Excluding Incidental (47.0)	14.7	12.8
Any Surgery (01-86)*		
Total	723.5	750.8
Males	517.4	543.0
Females	918.0	947.1
Whites	754.1	775.6
Nonwhites	627.7	628.1
Age 0-14	274.4	270.1
Age 15-44	775.8	841.0
Age 45-64	773.5	803.4
Age 65+	1379.1	1252.0

*A few diagnostic procedures in the 01-86 range have been excluded in this table to make the North Carolina data comparable to that published by the National Center for Health Statistics for the United States (reference (4)). Excluding these procedures reduces the rate of discharges "with surgery" by about 7 percent overall.

Note: Total population (male and female) was used in the denominators of the rates for hysterectomy, Cesarean section, and prostatectomy. Discharges with race not reported have been distributed back into the white and nonwhite groups.

North Carolina who were Medicare or Medicaid patients in general hospitals. The data for a few counties near Georgia or Tennessee for which we do not have complete information have been adjusted to account for out-migration, as is pointed out in the notes to Tables 6-9. About 2800 or 0.9 percent of the total of 317,000 federal patient records were missing a residence code, and in these cases the county of location of the hospital (if in North Carolina) was assigned as the county of residence of the patient.

The major factor affecting the choice of diagnoses and procedures for Tables 6-9 (found at the end of this paper) was the number of cases once the data were broken out for 100 counties. There are many diagnostic groups that would be interesting to examine at the state or regional level, such as conditions related to environmental or occupational exposure, but due to small numbers are not feasible to examine across 100 counties. Many patients with alcohol-related conditions are treated in general hospitals, but these conditions are severely under-diagnosed and/or under-reported. Additionally, emphasis was placed on chronic diseases and conditions.

With 20 discharges in the numerator, a discharge rate will have a 95 percent confidence interval as wide as the rate itself. For example, if county A had 20 Medicare discharges for a certain diagnosis out of 2000 medicare enrollees in the county, the measured rate would be 10 discharges per 1000 enrollees for that year. But due to year-to-year variability in rates with small numerators (regardless of the denominator size), one can say only that the underlying (or "true") rate is between 5 and 15 per 1000, with 95 percent certainty. With a numerator smaller than 20 the situation will be worse. Therefore, rates in the following tables with a numerator of less than 20 have been flagged with an asterisk (*) to indicate instability. Some diagnoses shown here have as many as half of the rates flagged (particularly for Medicaid), but it was decided that the unflagged rates would still be useful, and thus these diagnoses were included in the tables.

It should be emphasized that these rates are based on discharges, not persons, and it is estimated that around 25 percent of discharges during a year result from readmissions of the same person (8). The denominator for the Medicare rates is persons enrolled for Medicare hospital insurance, which for North Carolina as a whole on July 1, 1980 was 667,843. Eighty-six percent or 576,746 of these enrollees were aged beneficiaries (age 65 and over), which accounts for 96 percent of the total aged resident population in North Carolina. The other 14 percent of Medicare enrollees are disabled persons. The denominator for the Medicaid rates is persons who were eligible for Medicaid during the fiscal year, which totaled 457,246 statewide for 1980.

Tables 6 and 7 present county discharge rates for Medicare and Medicaid patients for selected principal diagnoses. Less detail was possible for Medicaid because of the small-number problem. Medicare enrollees experienced an overall 367 total discharges per 1000 in 1980, compared to a state rate of 124 for Medicaid eligibles' total discharges. What is striking about these tables are the large differences among counties in hospitalization experience. The total discharge rate for Medicare ranges from 249 in Orange County to 644 in Avery County. It should be recalled that these rates are not adjusted for age or other demographic factors, which do account for part of the differences. The Medicare rates are, however, age-adjusted to an extent since most of these persons are age 65 and over. The total discharge rate for Medicaid eligibles ranges from 49 in Camden County to 251 in Lincoln County.

It is beyond the scope of this paper to analyze these tables in detail, but it is hoped that the information that they contain will be useful to county health departments and others involved in local health programs. It should be emphasized, however, that general morbidity in a county is only one factor affecting the discharge rates shown here. For example, we have noticed in Table 7 that some counties whose residents have high rates for obstetric and perinatal complications, such as Durham, Forsyth, and Mecklenburg, have large medical centers located there. It could be that part of their relatively high rate is due to better diagnosis of these complications in the larger tertiary-care hospitals, and/or to a higher rate of hospital admission for these conditions where sophisticated treatment is available nearby. Warren County, on the other hand, with a relatively high rate for obstetric/perinatal complications, is a very rural county where these factors are not as likely to operate.

Please refer to the "Discussion" section for further consideration of factors affecting hospital use.

Medicare and Medicaid Surgery Rates by County

Tables 8 and 9 show discharges with surgery per 1000 Medicare enrollees and Medicaid eligibles by county. A discharge was counted as having a certain type of surgery if the surgery code appeared in any position of the procedure-code field of the medical record, not just under "principal procedure." Therefore, a discharge could be counted in more than one category if more than one of these procedures were performed. (The procedures selected here are, however, very likely to be the principal procedure and not likely to appear together.) As with the diagnoses, the major constraint here was finding procedures with enough cases to break out over 100 counties and still have most of the rates with 20 or more discharges in the numerator. No procedure met this criterion for Medicaid patients and so only total surgery is shown, which excludes most diagnostic and nonoperative procedures. Transurethral prostatectomy accounts for about 89 percent of all prostatectomies, and the other types were excluded from Table 8 under the assumption that they are generally less elective than the transurethral prostatectomy.

Other types of surgery that have fairly high frequency for Medicare and/or Medicaid patients, but were not included here because a county-level analysis could not be sustained, are hysterectomy (most patients are under age 65), cardiac catheterization, Cesarean section, appendectomy, and hemorrhoidectomy. High-frequency procedures that were not included because a large number of outpatient procedures performed in some areas could invalidate comparisons based on these inpatient data are diagnostic dilation and curettage of the uterus, occlusion of fallopian tubes, extraction of lens, and tonsillectomy.

Tables 8 and 9 reveal that, for North Carolina as a whole, Medicare enrollees had 143 discharges with surgery per 1000 compared to 61 for Medicaid eligibles. Thirty-nine percent of Medicare discharges to North Carolina residents had a mention of surgery on the medical record, while the figure for Medicaid is 50 percent. The percent of discharges with surgery should be viewed with caution since a county could have a very high total discharge rate and a high surgery rate, but a relatively low ratio of surgery to total discharges. For an example in the other direction, Medicaid patients in North Carolina on the average have a relatively low total discharge rate and a low surgery rate, compared to all payment sources combined, but the ratio of surgery to total discharges is

relatively high. The surgery rate and percent with surgery each present a different type of information.

There is wide variation among counties in the discharge rates for surgery. The number of discharges with surgery per 1000 Medicare enrollees ranges from 83 in Clay County to 224 in Avery County. The rate for Medicaid eligibles ranges from 26 in Dare County to 87 in Columbus County. Again, differences among counties in the level of health problems requiring surgery will contribute to this observed variation, but it is difficult not to conclude that in some areas the surgery rate could be reduced without adverse health consequences. This is also apparent when the specific types of surgery are examined in Table 8.

Because of possible problems with the data that are discussed below, these county rates in Tables 6 through 9 should not result in a final judgement about hospital use by the residents of a county. Rather, unusual rates invite further investigation into what may prove to be a problem area.

Discussion

These data reveal some interesting patterns of inpatient hospital utilization in North Carolina. Several cautions are in order, however, particularly for the county-level data. This information was collected entirely from secondary data sources over which we have no direct means of quality control. Each system has some editing procedures, but they vary among CPHA, HCFA, and the hospitals with computer systems. Even within the PAS system there are nearly a hundred hospitals locally coding the medical records information and there is no guarantee of consistency across hospitals. A few hospitals with peculiar coding procedures would not greatly affect the statewide data, but could greatly skew the information for a few counties. Every effort has been made to watch for problems of this sort, but as was stated above, a very high or low rate for a county should be the starting point for further inquiry and not the final word. These rates may better indicate the relative ranking of counties rather than absolute levels of utilization, since they most likely involve some degree of error.

It should be remembered that these data represent only people who are admitted as hospital inpatients, and differences among counties in hospital use do not necessarily mean the same differences in morbidity in the general population (9). Also, a high discharge rate could be due to many readmissions by relatively few patients. These rates have not been adjusted for age, race, or sex and thus differences among counties may be due in part or whole to these demographic factors. But the fact that a county's high hospital discharge rate for diabetes, for example, can be attributed to a large nonwhite population in the area does not reduce the magnitude of the problem in human terms or in terms of the quantity of medical care needed. A high level of disease cannot be ameliorated by statistical standardization.

On the positive side, this data base provides a comprehensive set of very detailed information about general hospital utilization by North Carolina residents, and its uses are not nearly limited to what has been presented in this publication. The full file from which the Medicare/Medicaid tables were drawn is the only available source of diagnosis-specific hospital data for all North Carolina hospital inpatients. Blue Cross and Blue Shield of North Carolina has compiled their paid claims records for Blue Cross subscribers and Medicare patients into a research form, and has distributed diagnosis- and surgery-specific information for these payment sources. Readers may notice some substantial

differences between the Medicare data shown herein and that distributed by Blue Cross for 1980. We are working to resolve these differences and if any substantial changes to the tables in this report result, you will be notified.

We feel confident about the general accuracy of this information, particularly for areas larger than a single county. Readers are invited to contact the State Center for Health Statistics about their needs for information of this type. As was mentioned before, release of data from this system that identifies a specific facility will require the permission of the hospital administrator.

The wide variation in county hospital discharge rates observed here naturally leads to the question Why? Though overall North Carolina hospital use is lower than that for the United States, some North Carolina counties have much higher utilization than the United States as a whole. A number of factors contribute to geographic differences in inpatient hospital utilization, including the level of morbidity, access to hospitals (economic and in terms of distance), the supply of hospital beds and physicians in an area, and the age, race, sex, and educational composition of the population. The availability and utilization of ambulatory care or outpatient medical services may also affect inpatient hospital utilization. Differences among counties in Medicaid utilization rates could result in part from a selectivity factor due to variations in the way that Medicaid eligibles are certified. The Institute for Health Planning has recently completed a national study of how some of these plus other factors affect hospital use (10). We intend to follow the present study with a similar analysis for North Carolina, using age-specific data from the Division of Facility Services on hospital utilization by county of residence for all payment sources combined. One approach is to quantitatively predict hospital use rates based on demographic and need factors, and then to determine what other variables account for deviations from these predicted or "expected" values. The national study found that factors other than need do indeed contribute to the demand for hospital services.

We do hope that the descriptive information for counties in the present report will assist health program administrators in North Carolina in identifying problem areas within their jurisdictions.

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State Center for Health Statistics phone number is (919)733-4728.

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- (1) State Center for Health Statistics, "The Use of Hospital Discharge Data for Estimating Morbidity in North Carolina," SCHS Studies, No. 20, July 1981, N.C. Division of Health Services.
- (2) See State Center for Health Statistics, "Hospital Summary Report, 1980" and "Hospital Patient Origin Report, 1980" Health Facilities Data Books, N.C. Division of Health Services. These two volumes are published annually and are based on hospital relicensure data collected by the Division of Facility Services.
- (3) National Center for Health Statistics, "Expected Principal Source of Payment for Hospital Discharges: United States, 1977," Advance Data, No. 62, October 31, 1980; and "Expected Principal Source of Payment for Hospital Discharges: United States, 1979," Advance Data, No. 75, February 16, 1982.
- (4) National Center for Health Statistics, "Utilization of Short-Stay Hospitals: Annual Summary for the United States, 1980," Vital and Health Statistics, Series 13, No. 64, 1982.
- (5) National Center for Health Statistics, Detailed Diagnoses and Surgical Procedures for Patients Discharged from Short-Stay Hospitals: United States, 1979, publication number (PHS) 82-1274-1, January 1982.
- (6) State Center for Health Statistics, "Wide Gaps in Mortality Risk: Comparisons Among Race-Sex Groups Across Time and Space Dimensions," SCHS Studies, No. 18, August 1980, N. C. Division of Health Services.
- (7) North Carolina Health Coordinating Council, North Carolina State Health Plan, April 1979, pages 58-60.
- (8) See reference # (1), page 11.
- (9) See reference # (1), page 10.
- (10) Institute for Health Planning, "Hospital Use: Health Status and Health Systems Report Series," Carol V. Getts, June 1982, Madison, Wisconsin.

IMPORTANT NOTES for Tables of Medicare and Medicaid Hospital Discharge Rates:

These rates have not been adjusted for age, race, or sex and thus differences among counties may be due in part or whole to these demographic factors. Another factor that may contribute to variation among counties is differential reporting. Also, keep in mind that these data represent only people who are admitted as hospital inpatients, and differences should not necessarily be taken to represent differences among counties in morbidity in the general population, since access to hospital care and physician practices vary among geographic areas. Therefore, these rates should raise a flag for further investigation and not be taken as a final judgment.

Rates with less than twenty discharges in the numerator have been marked with an asterisk (*) to indicate that they may be inaccurate due to large standard errors.

Discharges to N. C. residents from South Carolina and Virginia hospitals are included. Counties with more than a few patients going to hospitals in Georgia or Tennessee have been adjusted for this outmigration, though our estimates of total outmigration may not be appropriate for each specific diagnosis group. Counties that may have inaccurate utilization rates due to a large number of patients leaving the state are Clay (50%) and Madison (14%).

Discharge records were grouped into the diagnosis categories according to the following ICD-9-CM principal diagnosis codes:

Total	All general hospital discharges except normal newborns
Acute Myocardial Infarction	410
Other Ischemic Heart Disease	411-414
Stroke	430-438
Cancer	140-208
Cancer of the Trachea, Bronchus, or Lung	162
Cancer of the Colon, Rectum, or Anus	153, 154
Prostate Cancer	185 (Note: Rates use both male and female Medicare enrollees in the denominator.)
Chronic Obstructive Pulmonary (Lung) Disease	490-496
Diabetes	250
Arthritis	710-719
Accidents, Poisoning, and Violence	800-999
Kidney Disease	580-593
Obstetric or Perinatal Complications (for Medicaid only)	Selected codes from 641-674 and 760-779 indicating conditions with adverse consequences for maternal and/or child health. (A list is available upon request.)
Cardiovascular Disease (for Medicaid only)	A.M.I., Other Ischemic H.D., and Stroke combined

The ICD-9-CM procedure codes for the types of surgery shown in these tables are 01-86 for total surgery, 60.2 for transurethral prostatectomy, 53.0 and 53.1 for inguinal hernia repair, 51.2 for gallbladder removal (cholecystectomy), and 01-05 for operations on the nervous system.

Table 6

1980 GENERAL HOSPITAL INPATIENT DISCHARGES TO MEDICARE PATIENTS
PER 1000 MEDICARE ENROLLEES, FOR SELECTED PRINCIPAL DIAGNOSES
NOTE: MULTIPLE ADMISSIONS BY THE SAME PATIENT MAY BE INCLUDED
AND NEWBORNS ARE EXCLUDED; BASED ON COUNTY OF RESIDENCE

COUNTY OF RESIDENCE	# EN- ROLLED	TOTAL DISCH	AMI	OTHER ISCH. H.DIS	STROKE	CAN- CER	LUNG CAN.	COLON CAN.	PROS- TATE CAN.	CHR. LUNG DIS.	DIA- BETES	ARTH- RITIS	ACCI POIS VIOL	KID- NEY DIS.
ALAMANCE	13,693	278.8	9.3	12.9	17.0	27.3	2.9	4.2	2.5	6.9	7.0	3.2	19.1	6.4
ALEXANDER	2,517	592.0	16.7	34.6	30.6	42.5	6.0*	4.4*	4.8*	23.4	8.7	7.9	33.8	12.3
ALLEGHANY	1,604	610.3	21.2	24.3	23.7	54.2	8.1*	11.8	5.0*	19.3	8.1*	6.9*	33.0	15.6
ANSON	3,304	378.6	15.1	33.0	20.6	30.9	6.1	2.7*	4.5*	12.4	8.5	7.6	20.9	6.1
ASHE	3,385	543.0	13.6	22.2	29.8	36.6	6.2	5.0*	6.5*	26.0	10.0	12.4	36.3	5.3*
AVERY	1,945	643.7	10.8	13.4	29.3	26.2	2.1*	1.0*	3.6*	34.4	10.3	8.2*	57.1	11.8
BEAUFORT	5,658	384.9	9.0	19.3	18.9	34.8	4.9	4.6	3.9	15.0	5.8	6.5	19.1	8.0
BERTIE	3,030	372.6	6.3	17.8	22.1	41.9	6.3	5.3*	6.9	12.5	14.9	7.6	16.5	9.2
BLADEN	3,454	471.0	11.6	29.2	40.8	29.5	5.8	2.0*	5.2*	13.6	10.7	3.8*	25.8	15.3
BRUNSWICK	4,131	469.1	13.6	23.5	24.4	37.8	7.0	2.7*	4.8	28.6	10.4	7.0	24.9	9.0
BUNCOMBE	23,858	274.0	8.0	9.9	14.6	22.3	2.6	3.0	2.8	11.0	4.3	6.2	26.0	4.1
BURKE	7,911	427.3	12.6	26.0	26.9	27.8	4.0	2.9	2.9	15.5	8.2	7.7	26.8	7.6
CABARRUS	12,540	426.3	12.4	19.1	21.0	28.1	3.7	2.8	3.4	20.0	4.1	6.0	28.1	8.9
CALDWELL	7,115	519.5	13.5	23.5	26.4	29.1	3.5	2.1*	3.4	11.7	7.0	7.9	37.7	11.5
CAMDEN	719	280.9	9.7*	15.3*	22.3*	23.6*	1.4*	1.4*	5.6*	4.2*	4.2*	7.0*	19.5*	8.3*
CARTERET	4,814	407.1	9.6	15.6	15.2	43.8	9.3	3.9	3.3*	16.2	14.7	5.2	27.6	8.9
CASWELL	1,959	310.9	15.8	13.3	16.8	28.6	5.1*	5.1*	6.6*	15.3	5.6*	4.6*	21.4	4.1*
CATAWBA	11,779	356.0	11.7	14.0	21.2	23.5	3.4	1.8	3.1	12.7	5.6	7.6	27.5	7.3
CHATHAM	3,690	345.8	18.7	12.7	22.5	27.4	3.0*	3.3*	4.6*	14.1	5.4	5.7	21.4	7.9
CHEROKEE	3,084	387.5	11.7	16.9	20.1	20.8	1.0*	2.6*	2.6*	17.5	9.1	2.9	26.9	5.2*
CHOWAN	1,977	333.8	7.1*	21.2	24.3	36.9	8.1*	3.5*	5.6*	11.1	5.6*	5.1*	24.3	7.6*
CLAY	1,237	257.1	12.9*	21.0*	12.9*	3.2*	.0*	.0*	.0*	8.1*	4.9*	3.2*	16.2*	1.6*
CLEVELAND	10,245	419.8	10.9	17.1	26.3	29.9	4.4	3.5	3.4	16.4	9.5	8.3	27.6	7.4
COLUMBUS	6,598	574.6	15.8	36.7	39.1	37.4	7.0	4.8	4.2	22.7	17.3	8.6	28.6	18.8
Craven	6,320	394.5	8.4	20.1	21.4	39.2	9.5	3.2	5.9	15.3	8.2	5.7	20.1	9.2
CUMBERLAND	12,704	310.1	7.3	12.6	20.5	27.4	2.9	3.5	3.5	8.6	7.8	5.5	22.5	8.7
CURRITUCK	1,445	260.9	8.3*	14.5	15.2	31.8	6.9*	2.8*	5.5*	10.4*	2.8*	2.1*	12.5*	3.5*
DARE	1,683	250.1	8.3*	15.4	8.3*	25.5	4.8*	1.8*	.0*	2.4*	1.8*	4.2*	19.6	3.0*
DAVIDSON	11,429	385.2	12.4	17.0	18.4	36.2	5.2	4.6	2.1	15.0	9.5	6.6	27.0	10.1
DAVIE	2,836	417.1	10.9	22.6	18.0	31.7	3.9*	2.8*	4.6	9.9	8.5	6.0*	28.2	9.2
DUPLIN	5,002	384.8	11.2	20.0	27.4	33.0	6.0	1.4*	5.6	15.8	12.0	6.6	22.8	11.2
DURHAM	17,856	293.9	8.1	14.4	15.5	31.8	4.2	4.1	3.6	9.1	6.6	4.7	20.6	9.7
EDGECOMBE	7,758	287.4	10.1	13.1	16.6	20.2	2.4	2.4	2.6	10.7	5.2	7.6	21.3	9.7
FORSYTH	28,208	319.5	9.1	9.9	16.2	33.7	4.3	3.2	4.4	8.6	5.7	5.9	23.0	8.3
FRANKLIN	3,446	439.1	13.1	34.8	27.3	27.0	2.6*	4.6*	2.3*	19.2	8.1	7.5	27.0	15.7
GASTON	18,938	339.4	8.0	17.7	15.8	33.1	4.6	4.0	5.8	11.9	8.8	4.5	23.8	7.4
GATES	1,306	316.2	2.3*	17.6	16.8	29.9	5.4*	2.3*	6.9*	10.7*	4.6*	6.1*	15.3	5.4*
GRAHAM	1,079	380.9	12.0*	11.1*	16.7*	24.1	6.5*	2.8*	2.8*	14.8*	6.5*	5.6*	34.3	4.6*
GREENE	1,434	350.1	11.9*	31.4	11.9*	25.0	3.6*	1.7*	2.2*	10.4	6.5	3.1*	17.6	7.5
GUILFORD	36,504	343.3	9.0	17.3	17.8	30.4	4.7	2.9	3.8	11.0	7.0	5.4	25.5	5.7
HALIFAX	7,857	410.3	12.1	14.5	25.1	33.7	6.0	3.3	3.6	20.0	9.5	9.4	23.2	6.5
HARNETT	6,201	490.1	17.9	39.8	25.2	30.2	5.5	3.2	3.5	15.0	10.2	10.8	33.1	11.0
HAYWOOD	6,800	390.3	6.5	33.7	19.0	26.8	3.1	2.4*	4.1	11.5	7.2	7.9	27.8	7.9
HENDERSON	10,839	398.2	10.7	17.3	20.9	29.4	3.4	3.5	5.1	11.3	5.4	8.7	30.9	5.5
HERTFORD	2,949	418.4	7.1	22.0	27.5	30.2	5.8*	4.1*	3.1*	16.3	14.9	6.1*	24.8	8.8
HOKE	1,308	329.5	6.9*	9.2*	13.8*	39.8	10.7*	5.4*	1.5*	16.1	5.4*	9.2*	20.6	6.1*
HYDE	953	305.4	7.3*	6.3*	13.6*	37.8	7.3*	5.2*	9.4*	5.2*	5.2*	6.3*	16.8*	4.2*

COUNTY OF RESIDENCE	# EN- ROLLED	TOTAL DISCH	AMI	OTHER ISCH. H.DIS	STROKE	CAN- CER	LUNG CAN.	COLON CAN.	PROS- TATE CAN.	CHR. LUNG DIS.	DIA- BETES	ARTH- RITIS	ACCI POIS VIOL	KID- NEY DIS.
IREDELL	10,481	454.7	13.5	24.7	23.1	30.2	3.0	2.3	3.1	17.5	11.1	9.4	30.7	6.6
JACKSON	3,020	441.1	10.3	16.6	25.2	31.5	2.6*	2.3*	5.6*	15.2	7.9	7.0	29.1	5.6*
JOHNSTON	8,460	376.1	11.1	20.8	17.7	31.3	4.4	3.4	5.2	13.9	8.0	10.0	20.9	7.3
JONES	1,194	403.7	9.2*	20.9	17.6	41.0	4.2*	1.7*	1.7*	20.1	4.2*	8.4*	23.5	5.0*
LEE	4,468	328.6	12.1	17.0	20.4	26.4	4.5	2.2*	4.3	13.9	8.1	8.7	21.9	9.2
LENOIR	7,658	414.3	10.6	38.9	29.1	30.4	5.9	2.2*	1.7*	10.7	9.4	5.6	26.4	6.9
LINCOLN	4,573	469.3	13.8	33.5	35.9	22.1	2.8*	5.5	2.4*	9.8	14.2	7.7	34.8	9.0
MCDOWELL	4,563	374.1	8.1	19.3	19.9	19.7	2.6*	1.3*	2.6*	13.6	5.3	4.2	25.0	9.0
MACON	4,004	400.6	15.7	19.7	19.0	28.2	3.2*	3.0*	4.3*	11.0	10.5	6.0	28.7	6.0
MADISON	2,572	287.7	8.6	5.1*	14.0	27.2	4.7*	3.5*	3.0*	12.8	7.4*	7.8*	28.0	4.7*
MARTIN	3,371	401.4	9.2	22.2	27.9	27.0	4.7*	2.7*	3.0*	11.0	8.9	10.4	23.4	10.4
MECKLENBURG	38,768	308.7	9.0	15.3	14.8	30.3	4.6	3.8	4.0	10.1	5.4	7.0	23.7	5.2
MITCHELL	2,438	458.6	7.4	16.4	23.8	31.6	1.2*	6.2*	4.1*	30.8	11.1	12.7	32.8	9.0
MONTGOMERY	2,859	405.0	11.5	17.5	22.4	33.2	4.5*	3.5*	3.8*	19.9	7.3	4.9*	33.2	15.0
MOORE	7,739	326.9	8.4	9.2	17.3	30.5	5.4	4.0	3.9	20.5	4.5	6.6	21.6	4.3
NASH	6,761	431.9	15.5	28.8	28.1	36.5	5.9	4.1	7.2	22.5	6.4	10.4	24.8	8.0
NEWMANOVER	11,883	368.3	10.4	14.2	21.4	37.0	7.3	4.0	4.5	14.5	7.8	7.2	23.8	7.0
NORTHAMPTON	3,249	372.1	10.4	13.2	16.0	34.8	2.5*	6.5	7.1	15.1	7.4	7.4	24.6	8.3
ONSLow	4,517	452.5	10.4	27.2	21.9	43.2	4.6	4.6	5.5	19.0	10.6	11.5	28.1	9.3
ORANGE	5,627	249.2	11.0	7.5	16.2	26.1	4.3	2.8*	2.1*	7.5	5.2	4.6	17.9	10.8
PAMLICO	1,398	269.0	9.3*	11.4*	20.0	30.8	4.3*	4.3*	5.0*	3.6*	.0*	4.3*	17.2	1.4*
PASQUOTANK	3,700	290.0	7.6	16.2	16.8	25.4	3.2*	4.1*	3.2*	4.6*	3.2*	5.4	11.4	5.1
PENDER	2,872	370.1	13.9	21.2	21.2	42.1	4.9*	4.9*	8.4*	15.0	8.4	4.9*	17.4	9.4
PERQUIMANS	1,556	281.5	5.8*	13.5	19.3	32.1	4.5*	3.2*	5.8*	9.0*	2.6*	3.2*	11.6*	10.3*
PERSON	3,392	299.5	7.1	11.8	17.1	29.5	3.8*	3.5*	2.1*	8.0	9.7	5.9	20.6	5.3*
PITT	9,212	255.8	8.8	10.6	11.7	24.2	3.8	2.3	3.4	9.3	5.0	5.1	13.6	5.6*
POLK	2,588	345.4	10.4	9.7	24.7	24.7	1.5*	3.9*	5.0*	11.6	8.9	6.6*	41.3	4.3*
RANDOLPH	10,031	305.3	12.4	15.6	17.9	32.6	4.4	2.8	4.0	9.7	6.5	5.3	21.1	6.5
RICHMOND	5,794	468.2	6.9	31.8	24.9	36.1	4.7	4.5	3.8	19.8	14.0	9.5	27.3	11.7
ROBESON	10,568	341.6	9.2	16.4	20.9	26.5	1.8	3.6	3.4	10.6	9.4	5.7	21.6	8.8
ROCKINGHAM	11,165	414.4	11.2	22.6	25.2	28.9	3.9	3.3	5.7	19.6	14.4	5.9	24.4	8.8
ROWAN	13,206	429.7	13.3	19.9	25.2	38.5	4.2	4.2	3.8	15.8	8.4	7.0	28.8	9.0
RUTHERFORD	7,656	406.0	14.6	23.8	27.6	31.5	3.4	3.9	3.5	13.8	9.7	7.7	28.1	8.8
SAMPSON	5,867	369.0	12.3	14.8	23.0	39.7	3.9	5.6	5.1	9.7	6.5	6.8	26.2	7.3
SCOTLAND	3,307	367.1	10.0	11.2	21.5	32.4	3.0*	4.8*	2.4*	7.9	7.3	7.6	28.1	9.1
STANLY	6,772	302.4	11.1	12.4	17.4	22.4	4.0	3.4	2.5*	8.4	3.7	5.2	19.6	9.0
STOKES	3,069	540.6	14.3	33.6	34.5	29.3	2.6*	3.3*	3.3*	30.0	9.4	7.5	31.0	16.0
SURRY	8,829	414.2	11.4	21.5	18.7	34.3	5.4	2.4	3.9	16.6	7.1	7.6	29.2	9.7
SWAIN	1,680	500.0	3.0*	18.5	25.6	21.4	6.0*	1.2*	1.2*	20.2	9.9*	11.3	31.5	6.5*
TRANSYLVANIA	3,054	345.4	9.5	16.7	14.7	38.3	10.2	3.3*	4.9*	9.8	3.3*	5.6*	26.9	5.6*
TYRRELL	668	324.9	10.5*	22.5*	15.0*	29.9	7.5*	1.5*	4.5*	15.0*	1.5*	7.5*	19.5*	3.0*
UNION	6,251	337.7	9.3	18.7	20.0	29.8	3.7	4.2	3.0	10.7	9.0	7.7	22.6	8.3
VANCE	4,873	309.0	9.9	12.3	16.8	23.4	3.3*	2.5*	5.3	7.4	14.0	4.7	18.5	9.0
WAKE	26,322	353.4	9.3	13.5	19.1	29.5	4.2	2.6	2.8	13.6	5.6	7.2	25.6	7.1
WARREN	2,485	371.0	6.0	18.1	20.1	27.8	5.2*	2.8*	8.0	18.5	16.5	4.8*	16.9	6.0*
WASHINGTON	1,793	388.7	9.5*	17.8	24.0	36.3	6.1*	6.7*	7.5*	13.4	4.5*	7.3*	21.2	13.4
WATAUGA	2,965	540.6	13.8	23.3	27.7	47.6	4.0*	4.0*	4.7*	17.9	5.4*	8.1	32.4	8.1
WAYNE	9,680	360.4	13.0	16.5	20.0	30.6	4.5	2.8*	3.4	17.5	9.2	9.4	20.8	9.8
WILKES	6,425	371.5	10.0	12.8	19.1	25.1	3.4	2.2	3.0	17.9	5.3	4.7	28.6	7.6
WILSON	7,232	388.4	11.9	23.0	24.1	31.9	4.0	2.1*	2.9	16.3	5.1	7.7	18.8	5.0
YADKIN	3,763	455.0	9.3	23.4	21.5	37.7	4.5*	2.4*	4.0*	21.3	15.1	9.6	27.6	12.8
YANCEY	2,420	392.9	8.1*	13.6	25.4	24.0	1.4*	5.0*	1.8*	19.0	8.1*	11.3	27.6	7.7*
STATE TOTAL	667,843	367.3	10.4	17.9	20.3	30.6	4.3	3.4	3.9	13.4	7.6	6.7	24.8	7.8

Table 7

1980 GENERAL HOSPITAL INPATIENT DISCHARGES TO MEDICAID PATIENTS
PER 1000 MEDICAID ELIGIBLES, FOR SELECTED PRINCIPAL DIAGNOSES
NOTE: MULTIPLE ADMISSIONS BY THE SAME PATIENT MAY BE INCLUDED.
NORMAL NEWBORNS ARE EXCLUDED; BASED ON COUNTY OF RESIDENCE

COUNTY OF RESIDENCE	# OF ELIGIBLES	TOTAL DISCH	CARDIO- VASCULAR DISEASE	CHR. LUNG DIS.	DIA- BETES	ACCI POIS VIOL	OBSTETRIC/ PERINATAL COMPLICATIONS
ALAMANCE	4,974	136.9	2.6*	3.2*	3.2*	8.4	13.3
ALEXANDER	1,155	223.4	8.7*	7.8*	3.5*	22.5	13.0*
ALLEGHANY	645	220.2	18.6*	1.6*	1.6*	31.0*	1.6*
ANSON	2,325	96.8	6.9*	1.7*	5.2*	4.3*	7.7*
ASHE	1,477	169.9	5.8*	6.8*	2.0*	15.6*	3.4*
AVERY	869	226.7	5.8*	12.7*	2.3*	17.3*	1.2*
BEAUFORT	3,363	104.4	4.2*	2.9*	3.6*	6.8	4.5*
BERTIE	2,797	153.4	3.9*	3.9*	5.7*	8.6	7.2
BLADEN	4,068	171.1	6.6	3.2*	5.2*	8.8	11.3
BRUNSWICK	2,949	123.4	7.5	3.1*	4.1*	6.8	3.7*
BUNCOMBE	7,594	102.1	2.0*	2.8	1.2*	7.9	5.1
BURKE	3,375	154.7	4.7*	5.0*	1.8*	9.2	11.0
CABARRUS	4,776	170.9	9.0	8.6*	2.9*	10.9	13.6
CALDWELL	2,597	170.2	7.3	6.5*	1.9*	15.4*	10.8*
CAMDEN	536	48.5	3.7*	1.9	.0	1.9	5.6*
CARTERET	2,728	152.5	1.8*	7.0	2.9	11.7	4.8*
CASWELL	2,191	95.8	3.2*	3.2*	.9*	5.5*	3.7*
CATAWBA	4,875	137.6	3.7*	5.5	1.0*	8.4	14.6
CHATHAM	1,807	123.4	7.2*	1.7*	1.1*	10.5	5.0*
CHEROKEE	1,236	123.0	7.3*	4.9*	4.0*	8.9*	2.4*
CHOWAN	1,289	90.8	3.1*	2.5*	2.3*	4.7*	7.8*
CLAY	437	164.8	4.6*	4.6*	.0	18.3*	.0
CLEVELAND	7,531	121.2	2.7	3.1	2.8	11.6	8.5
COLUMBUS	5,900	216.9	14.9	8.0	5.1	14.7	8.8
Craven	6,058	112.7	2.6*	3.0*	2.3*	5.4	5.9
CUMBERLAND	23,144	111.9	1.9	2.5	1.7*	7.6	14.1*
CURRITUCK	597	58.6	1.7*	.0*	.0	3.4*	5.0*
DARE	456	63.6	4.4*	4.4*	.0	.0	4.4*
DAVIDSON	5,818	139.4	4.1	3.3	3.1*	10.8	13.9*
DAVIE	1,207	157.4	2.5*	3.3*	1.7*	13.3*	12.4*
DUPLIN	4,497	99.0	5.6	3.8*	3.3*	4.7	5.3
DURHAM	14,841	98.0	1.5	1.8	1.5	8.8	19.5
EDGECOMBE	8,599	110.2	3.5	3.1	2.6	8.5	10.0
FORSYTH	19,927	135.5	3.3	3.6	1.2	10.9	24.6
FRANKLIN	3,132	79.5	3.2*	1.0*	3.2*	4.5*	11.2
GASTON	11,159	109.6	2.9	2.7	2.4	5.5	6.3
GATES	858	127.0	1.2*	2.3*	5.8*	.0	5.8*
GRAHAM	549	158.5	1.8*	1.8*	7.3*	10.9*	9.1
GRANVILLE	2,482	104.4	5.6*	3.6*	1.6*	6.8*	15.3*
GREENE	2,220	74.3	4.1*	2.7*	1.4*	1.4*	5.4*
GUILFORD	24,397	115.7	3.2	2.6	3.5	8.0	7.7
HALIFAX	10,987	128.2	3.5	6.0	3.4	6.1	15.7
HARNETT	6,105	119.6	5.6	3.6	2.1*	8.8	8.7*
HAYWOOD	2,445	155.0	4.1*	7.8	1.6*	9.0	7.0
HENDERSON	2,476	157.5	4.0*	2.0*	4.0*	13.3	9.7*
HERTFORD	2,739	131.8	4.0*	4.4*	5.1*	5.5*	5.8
Hoke	2,352	98.6	2.6*	3.0*	3.0*	3.8*	14.5*
HYDE	609	90.3	3.3*	4.9*	1.6	6.6	1.6

COUNTY OF RESIDENCE	# OF ELIGIBLES	TOTAL DISCH	CARDIO- VASCULAR DISEASE	CAN- CER	CHR. LUNG DIS.	DIA- BETES	ACCI POIS VIOL	OBSJETRIC/ PERINATAL COMPLICATIONS
IREDELL	4,766	172.7	7.6	6.3	8.0	1.5*	10.1	12.4
JACKSON	1,287	133.6	7.0*	3.1*	9.3	1.6*	6.2*	1.6*
JOHNSTON	5,765	112.9	3.6	4.5	3.8	1.7*	7.1	2.9*
JONES	1,449	104.2	6.2*	4.8*	4.1*	4.1*	4.1*	4.8*
LEE	2,614	158.8	6.9*	8.8	6.1*	1.1*	10.7	9.2
LENOIR	6,393	145.5	6.6	6.3	8.2	1.1*	8.4	8.0
LINCOLN	2,024	250.5	4.0*	10.9	8.9	6.9*	13.3	22.7
MCDOWELL	1,962	105.0	5.1*	4.1*	5.6*	.5*	8.2*	8.2*
MACON	697	162.1	11.5*	2.9*	2.9*	4.3*	8.6*	2.9*
MADISON	1,828	66.8	4.5*	1.9*	1.3*	0.6*	7.6*	1.9*
MARTIN	2,275	131.0	6.2*	2.6*	2.2*	5.7*	7.3	10.5
MECKLENBURG	31,831	90.6	1.6	3.4	1.1	1.8	7.3	18.0
MITCHELL	1,154	157.7	4.3*	5.2*	6.9*	3.5*	12.1*	1.7*
MONTGOMERY	1,850	140.0	1.6*	6.5*	6.5*	2.7*	9.7*	9.2*
MOORE	3,276	174.6	2.7*	12.5	11.3	3.1*	15.0	16.5
NASH	7,295	157.0	8.4	7.7	11.2	2.7	9.2	15.2
NEWMANOVER	9,160	90.0	3.8	4.0	2.3	1.2*	5.0	6.2
NORTHAMPTON	4,297	99.8	3.3*	3.7*	4.2*	5.1	4.0*	13.0
ONslow	4,176	118.1	4.8	2.2*	2.9*	2.2*	6.7	3.6*
ORANGE	2,955	109.6	4.1*	8.5	2.4*	2.4*	10.8	8.8
PAMLICO	977	103.4	5.1*	6.1*	2.0*	1.0*	6.1*	7.2*
PASQUOTANK	2,186	79.6	1.4*	7.8*	2.3*	1.8*	3.7*	8.2*
PENDER	2,291	89.9	2.6*	1.3*	.9*	3.5*	6.5*	5.2*
PERQUIMANS	841	117.7	1.2*	2.4*	.0*	14.3*	3.6*	14.3*
PERSON	2,865	98.8	4.5*	7.3	1.0*	1.7*	4.2*	8.7
PITT	10,402	100.9	4.3	3.9	3.6	3.0	4.8	10.1
POLK	546	78.8	5.5*	7.3*	.0*	.0*	3.7*	3.4*
RANDOLPH	2,665	115.6	5.6*	6.0*	1.1*	3.8*	9.8	3.4*
RICHMOND	3,477	180.9	7.2	8.6	7.5	4.3*	9.2	6.3
ROBESON	15,816	138.5	5.4	5.0	2.9	2.6	11.1	11.6
ROCKINGHAM	5,805	150.9	6.0	4.8	6.0	4.5	9.3	8.4
ROWAN	4,791	179.7	3.8*	6.9	8.6	2.9*	12.3	10.4
RUTHERFORD	3,745	109.5	5.1	2.4*	2.1*	2.8*	5.6	5.6
SAMPSON	4,653	130.9	6.2	7.7	3.9*	2.4*	8.8	8.6
SCOTLAND	5,018	131.3	3.4*	1.8*	3.6*	1.4*	10.2	7.4
STANLY	2,459	113.1	2.8*	6.5*	4.5*	2.4*	10.6	5.7*
STOKES	1,648	192.4	14.0	14.6	6.1*	9.1*	12.1	9.7*
SURRY	3,143	144.1	4.5*	15.9	3.2*	3.6*	11.1	11.8
SWAIN	956	118.2	3.1*	7.3*	7.3*	2.1*	4.2*	1.0*
TRANSYLVANIA	1,201	135.7	5.8*	.8*	.0*	.8*	13.5*	10.0*
TYRRELL	659	122.9	1.5*	.0*	6.1*	1.5*	3.0*	10.6*
UNION	4,397	85.3	2.7*	3.9*	1.4*	1.6*	4.3	10.7
VANCE	4,993	121.2	4.4	5.0	2.0*	5.4	6.2	10.0
WAKE	18,027	94.5	1.9	4.1	2.7	2.6	5.9	11.9
WARREN	2,862	120.2	3.5*	6.3*	8.0	2.8*	6.3*	15.7
WASHINGTON	1,597	140.3	3.8*	3.1*	4.4*	4.4*	7.5*	13.1
WATAUGA	1,457	161.3	6.2*	7.5*	1.4*	4.8*	9.8*	4.8*
WAYNE	9,168	122.5	2.3	3.3	7.1	2.0*	6.5	10.4
WILKES	2,818	149.0	4.3*	8.2	4.6*	2.1*	20.2	6.7
WILSON	7,038	152.5	2.4*	5.0	17.2	3.7	4.4	5.4
YADKIN	1,455	208.2	13.1	7.6*	24.1	4.8*	13.7	7.8*
YANCEY	1,088	131.6	7.4*	3.7*	4.6*	3.7*	6.4*	7.7*
STATE TOTAL	457,246	123.6	4.0	5.0	4.0	2.6	8.2	11.0

Table 8

1980 GENERAL HOSPITAL INPATIENT DISCHARGES TO MEDICARE PATIENTS
PER 1000 MEDICARE ENROLLEES, FOR SELECTED SURGICAL PROCEDURES
NOTE: MULTIPLE DISCH. BY THE SAME PATIENT MAY BE INCLUDED, AND A DIS-
MAY BE COUNTED IN MORE THAN ONE COL. IF MULTIPLE PROCEDURES ARE CODED

COUNTY OF RESIDENCE	# OF ENROLLEES	TOTAL DISCH. EXCL. NEWBORN	DISCH. WITH ANY SURGERY	PERCENT OF DISCHARGES WITH SURGERY	TRANSURETHRAL PROSTATECTOMY	HERNIA REPAIR	GALLBLADDER REMOVAL	OPERATIONS ON NERVOUS SYSTEM
ALAMANCE	13,693	278.8	136.1	49	5.8	4.6	5.6	5.8
ALEXANDER	2,517	592.0	172.4	29	7.9	3.2*	7.2*	7.9
ALLEGHANY	1,604	610.3	197.6	32	5.6*	2.5*	8.1*	8.7*
ANSON	3,304	378.6	120.5	32	6.4	3.9*	6.1	4.2*
ASHE	3,385	543.0	144.5	27	9.7	3.8*	6.8	2.7*
AVERY	1,945	643.7	223.7	35	7.2	10.3	10.8	6.7*
BEAUFORT	5,658	384.9	122.5	32	4.9	3.2*	5.3	1.9*
BERTIE	3,030	372.6	102.6	28	4.3	3.0*	2.6*	4.3*
BLADEN	3,454	471.0	191.4	41	9.6	4.3*	5.2*	5.2*
BRUNSWICK	4,131	469.1	137.7	29	13.1	4.1*	6.1	7.0
BUNCOMBE	23,858	274.0	125.2	46	6.4	3.8	4.7	5.2
BURKE	7,911	427.3	164.1	38	8.6	5.6	6.7	5.3
CABARRUS	12,540	426.3	132.9	31	8.1	4.0	6.0	2.4
CALDWELL	7,115	519.5	190.4	37	9.6	4.6*	7.2	7.9
CAMDEN	719	280.9	101.5	36	4.2	4.2*	7.0*	1.4*
CARTERET	4,814	407.1	127.8	31	3.9	6.2	5.0	6.2*
CASWELL	1,959	310.9	145.0	47	11.2	3.6*	5.1*	8.2*
CATAWBA	11,779	356.0	141.2	40	4.8	4.2	6.6	6.0
CHATHAM	3,690	345.8	116.3	34	8.7	2.2*	4.1*	6.8*
CHEROKEE	3,084	387.5	119.3	31	5.2*	2.3*	3.9*	4.9*
CHOWAN	1,977	333.8	106.7	32	4.0	7.6*	4.0*	4.6*
CLAY	1,237	257.1	82.5	32	.0	3.2*	3.2*	3.2*
CLEVELAND	10,245	419.8	129.6	31	8.8	3.5	5.8	2.5
COLUMBUS	6,598	574.6	172.8	30	8.9	4.2	4.2	6.8
CRAVEN	6,320	394.5	154.4	39	7.9	5.7	4.6	6.3
CUMBERLAND	12,704	310.1	133.4	43	10.6	2.9	4.7	5.3*
CURRITUCK	1,445	260.9	98.3	38	6.2*	5.5*	8.3*	3.5*
DARE	1,683	250.1	98.0	39	5.3	5.3*	3.0*	2.4*
DAVIDSON	11,429	385.2	164.7	43	3.8	4.6*	7.6	6.4
DAVIE	2,836	417.1	143.5	34	8.1	4.9*	5.6*	7.4*
DUPLIN	5,002	384.8	130.5	34	10.6	4.6	3.8	3.4*
DURHAM	17,856	293.9	135.5	46	5.8	4.9	4.0	7.7
EDGEcombe	7,758	287.4	138.2	48	6.3	4.9	4.5	7.3
FORSYTH	28,208	319.5	146.5	46	9.3	4.5	5.4	7.9
FRANKLIN	3,446	439.1	108.5	25	3.5	2.9*	3.5*	4.9*
GASTON	18,938	339.4	151.7	45	8.7	5.0	5.9	5.9
GATES	1,306	316.2	93.4	30	6.9*	6.9*	6.1*	3.1*
GRAHAM	1,079	380.9	136.2	36	3.7*	4.6*	4.6*	.9
GRANVILLE	4,154	279.2	101.8	36	3.9*	2.4*	2.6*	5.8*
GREENE	1,434	350.1	150.6	43	7.7	2.1*	3.5*	4.2
GUILFORD	36,504	343.3	159.7	47	9.5	3.9	5.5	9.3
HALIFAX	7,857	410.3	158.7	39	6.1	3.8	2.8	5.2
HARNETT	6,201	490.1	131.9	27	6.3	3.4	5.2	4.8
HAYWOOD	6,800	390.3	144.4	37	13.5	4.7	5.7	5.3
HENDERSON	10,839	398.2	167.1	42	7.0	5.6	4.8	8.8*
HERTFORD	2,949	418.4	101.4	24	4.1*	3.1*	3.7*	2.4*
HOKE	1,308	329.5	135.3	41	13.0	3.1*	3.8*	5.4*
HYDE	953	305.4	97.6	32	3.1	3.1*	6.3*	4.2

COUNTY OF RESIDENCE	# OF ENROLLEES	TOTAL DISCH. EXCL. NEWBORN	DISCH. WITH ANY SURGERY	PERCENT OF DISCHARGES WITH SURGERY	TRANSURETHRAL PROSTATECTOMY	INGUINAL HERNIA REPAIR	GALLBLADDER REMOVAL	OPERATIONS ON NERVOUS SYSTEM
IREDELL	10,481	454.7	180.1	40	10.7	4.3	6.1	7.4
JACKSON	3,020	441.1	147.4	33	6.6	5.6*	5.0*	3.3*
JOHNSTON	8,460	376.1	143.7	38	6.5	5.8	5.1	5.6
JONES	1,194	403.7	149.9	37	3.4*	5.9*	.0*	8.4*
LEE	4,468	328.6	110.1	34	9.6	3.8*	4.7	2.9*
LENOIR	7,658	414.3	118.6	29	8.6	2.6	3.8	4.0
LINCOLN	4,573	469.3	129.0	27	7.4	4.8	6.6	5.2
MCDOWELL	4,563	374.1	144.6	39	8.5	5.3	7.2	2.8*
MACON	4,004	400.6	138.9	35	3.5*	6.0	7.0	2.5*
MADISON	2,572	287.7	127.1	44	7.4*	1.6*	8.9	6.2*
MARTIN	3,371	401.4	120.1	30	5.3*	4.7*	3.9*	7.1
MECKLENBURG	38,768	308.7	124.0	40	6.7	4.1	4.9	2.9
MITCHELL	2,438	458.6	119.8	26	9.0	4.1*	6.6*	4.5*
MONTGOMERY	2,859	405.0	132.6	33	7.0	5.2*	5.2*	4.2*
MOORE	7,739	326.9	114.9	35	13.4	5.6	5.2	3.4
NASH	6,761	431.9	167.9	39	10.5	5.0	4.6	7.5
NEWMANOVER	11,883	368.3	165.1	45	8.8	4.1	4.8	7.7
NORTHAMPTON	3,249	372.1	141.0	38	7.4	4.3*	1.5*	3.7*
ONSLow	4,517	452.5	179.5	40	7.5	3.5*	5.3	6.6
ORANGE	5,627	249.2	133.8	54	4.4	5.0	3.2*	13.3
PAMLICO	1,398	269.0	131.6	49	5.0*	5.7*	4.3*	7.2*
PASQUOTANK	3,700	290.0	96.8	33	6.2	5.4	5.7	1.6*
PENDER	2,872	370.1	136.1	37	7.0	1.4*	4.5*	3.5*
PERQUIMANS	1,556	281.5	93.8	33	10.3*	1.9*	2.6*	1.9*
PERSON	3,392	299.5	124.4	42	4.4*	4.7*	6.2	4.7*
PITT	9,212	255.8	126.9	50	6.7	3.3	4.6	7.7
POLK	2,588	345.4	150.3	44	8.5	4.6*	5.4*	4.6*
RANDOLPH	10,031	305.3	125.9	41	9.3	4.8	4.8	4.7
RICHMOND	5,794	468.2	137.4	29	10.2	3.6	5.4	4.0
ROBESON	10,568	341.6	139.1	41	7.9	3.9	4.7	5.1
ROCKINGHAM	11,165	414.4	136.9	33	8.1	3.0	4.5	7.8
ROWAN	13,206	429.7	157.4	37	2.8	5.1	6.1	6.4
RUTHERFORD	7,656	406.0	169.3	42	5.2	3.8	4.8	3.9
SAMPSON	5,867	369.0	149.5	41	8.9	4.8	5.3	5.5
SCOTLAND	3,307	367.1	119.1	32	5.4*	1.8*	2.7*	2.1*
STANLY	6,772	302.4	130.7	43	6.3	3.2	5.5	4.0
STOKES	3,069	540.6	154.4	29	10.8	5.9*	5.2*	5.2*
SURRY	8,829	414.2	152.2	37	11.7	5.8	7.0	7.2
SWAIN	1,680	500.0	157.1	31	5.4*	2.4*	3.0*	3.0*
TRANSYLVANIA	3,054	345.4	136.5	40	10.8	5.6*	3.3*	6.5
TYRRELL	668	324.9	106.3	33	10.5*	6.0*	3.0*	3.0*
UNION	6,251	337.7	140.1	41	9.1	3.0	6.9	3.2
VANCE	4,873	309.0	118.2	38	6.6	2.7*	5.1	5.3
WAKE	26,322	353.4	149.6	42	7.1	5.0	5.7	9.7
WARREN	2,485	371.0	89.7	24	8.0	2.4*	3.2*	5.2*
WASHINGTON	1,793	388.7	108.8	28	5.0*	1.1*	2.2*	5.0*
WATAUGA	2,965	540.6	181.1	33	7.8	8.1	10.1	2.4*
WAYNE	9,680	360.4	203.2	56	6.8	3.4	2.9	4.2
WILKES	6,425	371.5	120.0	32	10.6	3.7	3.9	5.0
WILSON	7,232	388.4	175.3	45	5.1	2.9	6.1	6.4
YADKIN	3,763	455.0	164.0	36	12.8	4.5*	8.0	8.2
YANCEY	2,209	392.9	118.2	30	6.3*	4.5*	3.6*	6.3*
STATE TOTAL	667,843	367.3	142.6	39	7.6	4.3	5.2	5.8

Table 9

1980 GENERAL HOSPITAL INPATIENT DISCHARGES TO MEDICAID PATIENTS
PER 1000 MEDICAID ELIGIBLES: TOTAL DISCHARGES EXCLUDING NEWBORN
AND TOTAL DISCHARGES WITH SURGERY
(NOTE: MULTIPLE DISCHARGES TO THE SAME PATIENT MAY BE INCLUDED.)

COUNTY OF RESIDENCE	# OF ELIGIBLES	TOTAL DISCHARGES	DISCHARGES WITH SURGERY	PERCENT OF DISCHARGES WITH SURGERY
ALAMANCE	4,974	136.9	80.6	59
ALEXANDER	1,155	223.4	86.6	39
ALLEGHANY	645	220.2	86.8	39
ANSON	2,325	96.8	37.8	39
ASHE	1,477	169.9	65.0	38
AVERY	869	226.7	73.6	32
BEAUFORT	3,363	104.4	50.0	48
BERTIE	2,797	153.4	54.0	35
BLADEN	4,068	171.1	84.3	49
BRUNSWICK	2,949	123.4	49.8	40
BUNCOMBE	7,594	102.1	54.1	53
BURKE	3,375	154.7	66.7	43
CABARRUS	4,776	170.9	61.8	36
CALDWELL	2,597	170.2	75.9	45
CAMDEN	536	48.5	33.6 *	69 *
CARTERET	2,728	152.5	71.1	47
CASWELL	2,191	95.8	47.5	50
CATAWBA	4,875	137.6	71.4	52
CHATHAM	1,807	123.4	54.2	44
CHEROKEE	1,236	123.0	38.8	32
CHOWAN	1,289	90.8	44.2	49
CLAY	437	164.8	41.2 *	25 *
CLEVELAND	7,531	121.2	55.5	46
COLUMBUS	5,900	216.9	87.1	40
Craven	6,058	112.7	67.5	60
CUMBERLAND	23,144	111.9	67.2	60
CURRITUCK	597	58.6	30.2 *	51 *
DARE	456	63.6	26.3 *	41 *
DAVIDSON	5,818	139.4	71.5	51
DAVIE	1,207	157.4	74.6	47
DUPLIN	4,497	99.0	44.0	44
DURHAM	14,841	98.0	63.7	65
EDGECOMBE	8,599	110.2	66.6	60
FORSYTH	19,927	135.5	78.6	58
FRANKLIN	3,132	79.5	40.2	51
GASTON	11,159	109.6	58.1	53
GATES	858	127.0	52.4	41
GRAHAM	549	158.5	54.6	34
GRANVILLE	2,482	104.4	61.6	59
GREENE	2,220	74.3	41.0	55
GUILFORD	24,397	115.7	66.0	57
HALIFAX	10,987	128.2	65.7	51
HARNETT	6,105	119.6	51.4	43
HAYWOOD	2,445	155.0	66.3	43
HENDERSON	2,476	157.5	78.4	50
HERTFORD	2,739	131.8	54.0	41
HOKE	2,352	98.6	58.7	59
HYDE	609	90.3	34.5	38

COUNTY OF RESIDENCE	# OF ELIGIBLES	TOTAL DISCHARGES	DISCHARGES WITH SURGERY	PERCENT OF DISCHARGES WITH SURGERY
IREDELL	4,766	172.7	83.9	49
JACKSON	1,287	133.6	45.1	34
JOHNSTON	5,765	112.9	52.9	47
JONES	1,449	104.2	53.1	51
LEE	2,614	158.8	70.0	44
LENOIR	6,393	145.5	68.2	47
LINCOLN	2,024	250.5	68.7	27
MCDOWELL	1,962	105.0	45.4	43
MACON	697	162.1	37.3	23
MADISON	1,828	66.8	36.3	54
MARTIN	2,275	131.0	59.8	46
MECKLENBURG	31,831	90.6	38.7	43
MITCHELL	1,154	157.7	56.3	36
MONTGOMERY	1,850	140.0	63.8	46
MOORE	3,276	174.6	77.8	45
NASH	7,295	157.0	82.5	53
NEWMANOVER	9,160	90.0	48.9	54
NORTHAMPTON	4,297	99.8	49.8	50
ONSLOW	4,176	118.1	58.7	50
ORANGE	2,955	109.6	55.2	50
PAMLICO	977	103.4	58.3	56
PASQUOTANK	2,186	79.6	43.9	55
PENDER	2,291	89.9	53.3	59
PERQUIMANS	841	117.7	39.2	33
PERSON	2,865	98.8	57.2	58
PITT	10,402	100.9	56.9	56
POLK	546	78.8	38.5	49
RANDOLPH	2,665	115.6	59.3	51
RICHMOND	3,477	180.9	55.2	31
ROBESON	15,816	138.5	71.3	51
ROCKINGHAM	5,805	150.9	59.1	39
ROWAN	4,791	179.7	71.6	40
RUTHERFORD	3,745	109.5	46.7	43
SAMPSON	4,653	130.9	66.6	51
SCOTLAND	5,018	131.3	63.4	48
STANLY	2,459	113.1	54.1	48
STOKES	1,648	192.4	53.4	28
SURRY	3,143	144.1	71.3	49
SWAIN	956	118.2	41.8	35
TRANSYLVANIA	1,201	135.7	62.4	46
TYRRELL	659	122.9	47.0	38
UNION	4,397	85.3	43.7	51
VANCE	4,993	121.2	62.1	51
WAKE	18,027	94.5	52.6	56
WARREN	2,862	120.2	48.9	41
WASHINGTON	1,597	140.3	50.1	36
WATAUGA	1,457	161.3	67.3	42
WAYNE	9,168	122.5	77.2	63
WILKES	2,818	149.0	63.5	43
WILSON	7,038	152.5	73.0	48
YADKIN	1,455	208.2	83.8	40
YANCEY	1,088	131.6	58.0	44
STATE TOTAL	457,246	123.6	61.3	50



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